December 30, 2013

Mr. Ken Thiessen
Oregon Department of Environmental Quality
2020 SW Fourth Avenue, Suite 400
Portland, OR 97201-4987

Subject: **Response to DEQ Comments**
Proposed Incremental Surface Soil Sampling
Willamette Cove Upland Facility

Dear Ken:

This letter provides the Oregon Department of Environmental Quality (DEQ) with a response to the comments received on the Willamette Cove Upland Facility *Proposed Incremental Surface Soil Sampling* (Apex, 2013). The comments were provided to the Port of Portland (Port) in a letter from the DEQ dated December 19, 2013. The DEQ comments are repeated (in italics) followed by the Port response.

1) *Sampling Approach: Systematic grid sampling can lead to biased data, as illustrated by DU-6, with samples collected in straight lines leaving substantial areas without sample representation. In order to collect a more representative sample set, random sampling within a grid is recommended. This will allow a less biased estimate on the mean while still maintaining spatial coverage with a grid. This is particularly important since only one increment will be collected from each decision unit.*

   The 2012 upland sampling area (DU-3) should be included in this 2014 sampling event as it will be used in decision making for the upland site. Otherwise, a form of area-weighted averaging will be needed to incorporate the DU-3 area back into the upland decision unit concentration.

   Response. Each incremental sample will consist of 50 soil increments collected from the approximate center of a randomly selected quadrant as shown on Figure 3 of the revised document.

   The 2012 decision units represent a highly concentrated hot spot. The Port specifically excluded these decision units in order to assess the remainder of the upland.

2) *Sampling Tool: DEQ recommends the use of a sampling tool to obtain cylindrical core increments of a constant depth. It is important that the sampling tool equally retain all of the particles over the entire sampling depth. A sampling spoon does not meet these objectives. The dimensions and volume of the sampling tool should be reported. Consider use of an*

incremental sampling tool such as that shown at the following link: http://www.envirostat.org/samplingtools.htm

Response. Use of a cylindrical sampler has been included in the revised document.

3) *Archiving: It is recommended that field increments be archived to allow further refinement of areas of concern as necessary.*

Response. The Port does not plan to archive the discrete field increments due to the additional that would be labor required (e.g., additional sample collection, labeling, etc.).

4) *Quality Control Replicates: At least one field replicate representing an independent increment (similar to the blind duplicate proposed from DU-5) and one laboratory process replicate from the two dimensional slabcake should be collected in addition to any analytical replicates. The field replicate should be taken from DU-5 as proposed, where the most heterogeneity in chemical distribution has been recorded.*

Response. The blind duplicate proposed for DU-5 has been correctly identified as a replicate in the revised document. A laboratory process replicate has been added to the scope of work in the revised document.

5) *Laboratory Sub-sampling: The SOP notes "sub-sampling scheme may be performed in accordance with client specifications if requested." It is assumed the requested methods are those outlined in this SOP. The SOP describes a two dimensional slabcake approach for subsampling in the laboratory. However, it does not discuss how the fundamental error will be reduced through processing. Grinding to a fine powder «250 um) is recommended in order to correct for this error and keep the extraction mass low (e.g. I gram). It appears that the laboratory has a mortar and pestle grinder (Section 6). If grinding is not completed and soil is <2 mm as indicated on Page 4, a larger extraction volume is needed (10 grams).*

The sample for percent moisture should be collected as subsamples from the slabcake using the same methodology as those for chemical analysis for appropriate data correlation.

Response. The Port reviewed the ITRC incremental sampling guidance document and communicated with the laboratory. ITRC indicates that grinding is not recommended for organic contaminants due to the potential for loss of organics due to increased temperatures. The laboratory agrees with this approach. Our experience at the site suggests that the typical particle sizes are in the range of silt to sand. Subsequently, we do not believe that it is necessary to reduce the particle size. As suggested by DEQ and the ITRC guidance, the extraction volume will be increased.

The percent moisture sample will be collected as requested.

6) *Chemical Analysis: The requested method detection limits and reporting limits should be consistent with 2012 sampling work. Concentrations should again be reported to detection limits.*

Response. These protocols will be followed.

7) *Sampling analytes. Only dioxin/furan analysis is proposed using EPA Method 8290. Given the variability of upland sampling results and the limited number of samples in some areas, DEQ recommends that metals (PPM 13) be included as upland analytes.*

Response. The Port plans to analyze the incremental samples for priority pollutant 13 metals and polycyclic aromatic hydrocarbons (PAHs).

Please call me at (503) 415-6325 if you have any questions.

Sincerely,

Dwight Leisle
Environmental Project Manager

Reference:

Apex, 2013. *Proposed Incremental Surface Soil Sampling,* Willamette Cove Upland Facility Portland, Oregon, ECSI No. 271. December 3, 2013.

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LWP File